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मानक

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Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 3264 (1985): Diamond or Cubic Boron Nitride Abrasive Grinding Wheels [PGD 9: Abrasives]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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Indian Standard

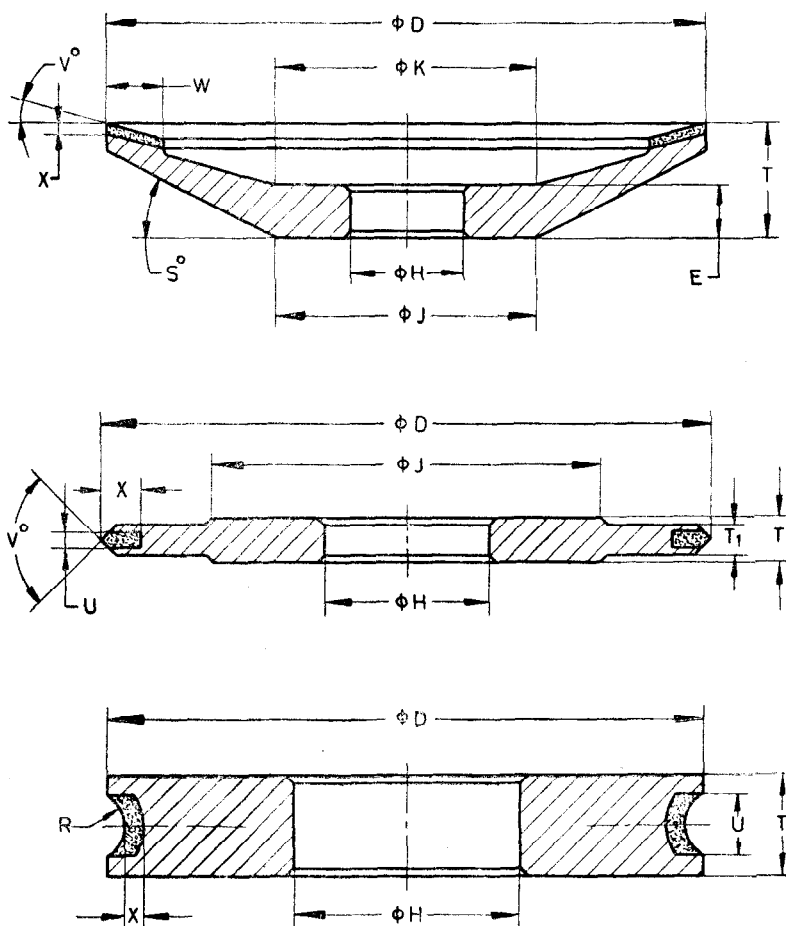
SPECIFICATION FOR DIAMOND OR CUBIC BORON NITRIDE ABRASIVE GRINDING WHEELS

(First Revision)

1. Scope — Covers the dimensional and other requirements of diamond or cubic boron nitride abrasive grinding wheels.

Note — For simplification, reference is made throughout this standard to 'diamond' grinding wheels', but all indications also apply to cubic boron nitride grinding wheels.

2. Key to Letter Dimensions for Diamond Grinding Wheel



where

 D = outside diameter E = thickness at bore H = bore diameter J = hub diameter K = inside recess diameter R = radius S° = angle of body T = overall thickness T_1 = reduced hub thickness U = thickness of diamond section V° = face angle W = rim width X = depth of diamond section

3. Dimensions

3.1 Dimensions of diamond grinding wheels shall be as given in 3.2 to 3.15.

3.1.1 The values of bore diameter H are not standardized and shall be as agreed between the manufacturer and the purchaser.

Adopted 21 June 1985

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AMENDMENT NO. 1 APRIL 2009
TO
IS 3264 : 1985 SPECIFICATION FOR DIAMOND OR CUBIC BORON NITRIDE
ABRASIVE GRINDING WHEELS

(*First Revision*)

(Page 8, clause 3.9.2) — Substitute the following for existing figure:

(Page 12, clause 4.1, Table) — Substitute the following for the existing:

Shape	Total Indicator Reading (TIR) mm		
	Periphery	Sides	Rim
Peripheral grinding wheels	0.05	0.05	—
Straight cup and dish grinding wheels	0.05	—	0.05
Taper cup grinding wheels	0.05	—	0.05

(Page 12, clause 4.2) — Substitute the value of Rim width ' $W = \pm 0.5$ mm or ± 5 percent of rim width whichever is more' for ' $W = \pm 0.8$ mm or ± 5 percent of rim width whichever is more'.

Amend No. 1 to IS 3264 : 1985

(Page 12, clause 4.2) — Substitute the value of Depth of diamond section ' $X = +0.5$ mm or $+5$ percent of the depth of diamond section whichever is more' for ' $X = \pm 5$ percent of the depth of diamond section'.

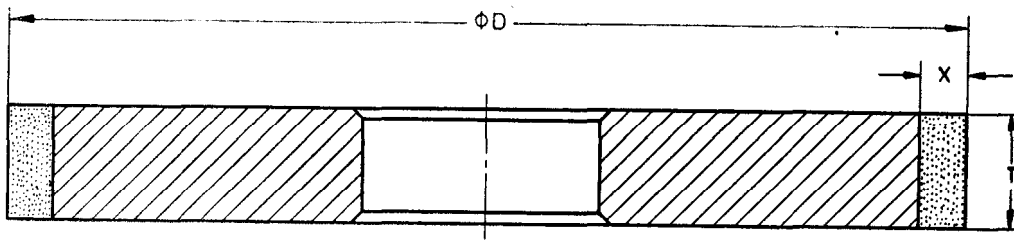
(Page 12, clause 5) — Substitute the following for existing:

‘Type of Bond – The type of bond for grinding wheels shall be resin or metal or electroplated or vitrified.’

[Page 13, clause 11(e)] — Substitute the following for existing:

‘e) Type of bond (resin or metal or electroplated or vitrified), and’

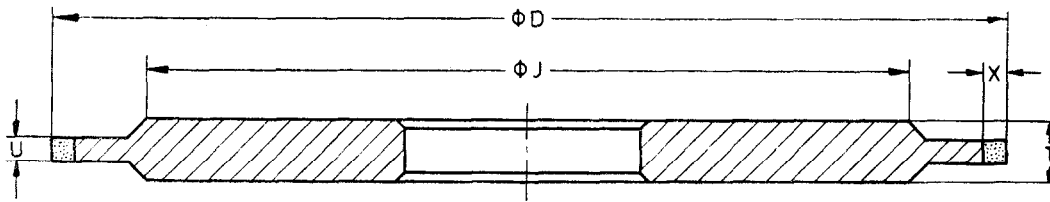
3.2 Plain Grinding Wheel-Designation — 1A1



All dimensions in millimetres.

D	T												X
	3	4	5	6	8	10	12	15	20	40	60	100	
20	—	×	—	×	×	×	×						1·5, 3, 6
25	—	×	—	×	×	×	×						
40	—	×	—	×	×	×	×						
50	—	×	—	×	×	×	×						
75	×	×	×	×	—	×	×						
100	×	×	×	×	—	×	×						
125	×	×	×	×	—	×	×	×					
150	×	×	×	×	—	×	×	×	×				
175	—	—	—	×	—	×	×	×	×				
200	—	—	—	×	—	×	×	×	×				
250	—	—	—	×	—	×	×	×	×	×	×		
300	—	—	—	—	—	×	×	×	×	×	×		
350	—	—	—	—	—	—	×	×	×	×	×	×	
400	—	—	—	—	—	—	×	×	×	×	×	×	
450	—	—	—	—	—	—	×	×	×	×	×	×	
500	—	—	—	—	—	—	×	×	×	×	×	×	
600	—	—	—	—	—	—	×	×	×	×	×	×	
750	—	—	—	—	—	—	—	×	×	×	×	×	

3.3 Plain Grinding Wheel Reinforced — Designation 14A1

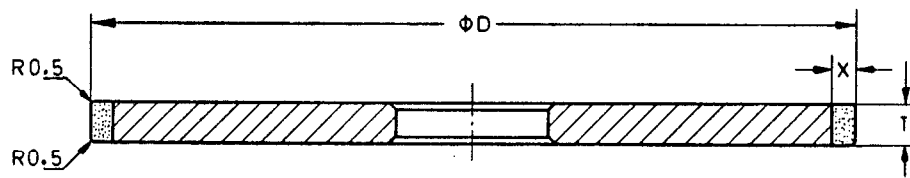


All dimensions in millimetres.

<i>D</i>	<i>J</i>	<i>T</i>	<i>U</i>	<i>X</i>
75	50	6	1, 2	3, 6
100	70	6	1, 2	
		8	3	
125	100	6	1, 2	
		8	3	
150	120	10, 12	1, 2	
175	140	10, 12	1, 3, 6	
200	160	12, 15	3, 6	
250	200	12, 15, 20	6, 10	
300	250	15	6, 10	
		20	15	
350	300	15	6, 10	
		20	15	
400	350	20	6, 10, 15	
500	400	20	10, 15	
600	500	20	10, 15	
750	600	20	10, 15	

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3.4 Plain Grinding Wheel — Designation 1L1

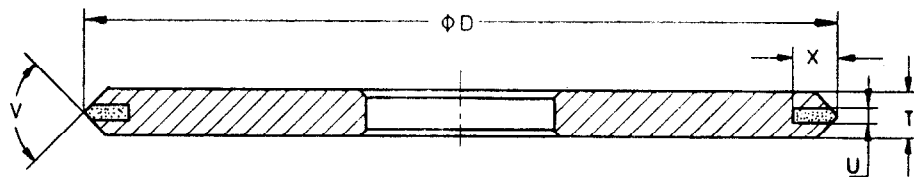


All dimensions in millimetres.

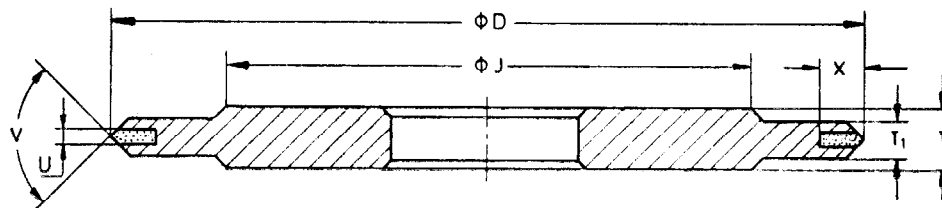
D	T				X
	3	4	5	6	
75	x	x	x		1.5, 3, 6
100	x	x	x		
125	x	x	x	x	
150	x	x	x	x	

3.5 Plain Grinding Wheels

Designation 1E6Q

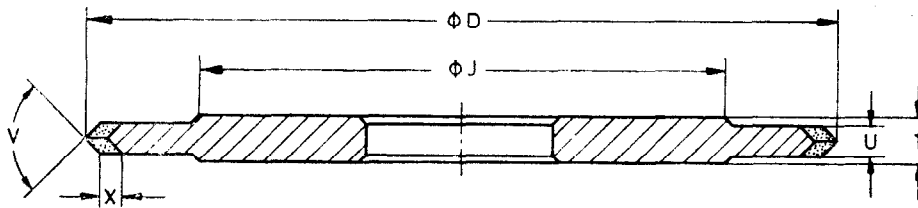


Designation-14E6Q



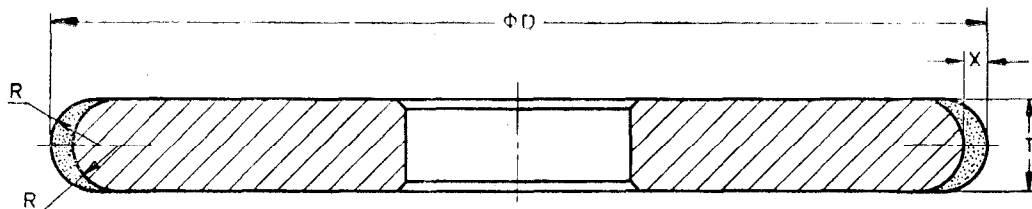
All dimensions in millimetres.

D	J	T	T_1	U	X	V
40	22	6	4	1, 2	6	35°, 45°, 60°, 90°
50	32	6	4	1, 2		
75	50	6	4	1, 2		
100	70	6	4	1, 2		
125	100	8	5	1, 2		
150	120	8	5	1, 2		
220	180	12	5	1, 2		

3.6 Plain Wheel**3.6.1 Reinforced — Designation 14EE1**

All dimensions in millimetres.

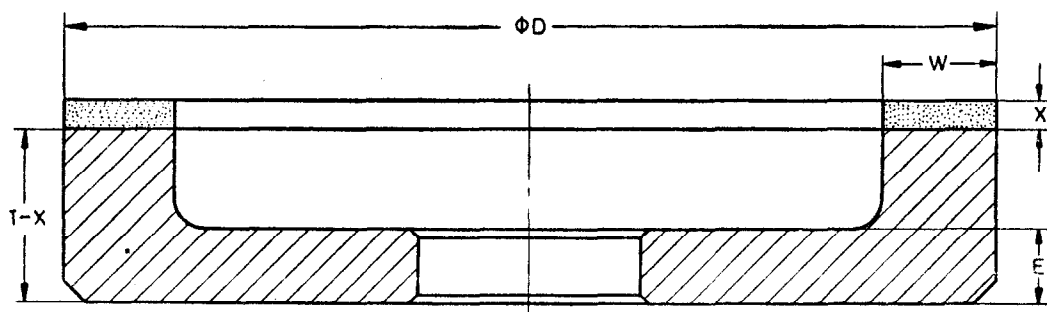
<i>D</i>	<i>J</i>	<i>T</i>	<i>U</i>	<i>V</i>
100	70	6	3, 4	35°, 45°, 60°, 90°
125	100	6	3, 4	
150	120	6	3, 4	
175	140	8	4, 5	
200	160	10	4, 5	
250	200	15	4, 5	
<i>V</i>	35°	45°	60°	90°
<i>X</i>	3	2, 5	2	1.5
	6	5	4	3

3.6.2 Designation 1FF1

All dimensions in millimetres.

<i>D</i>	<i>R</i>	<i>T</i>	<i>X</i>
50	2 to 10	2R	2, 3, 4
75			
100			
125			
150			

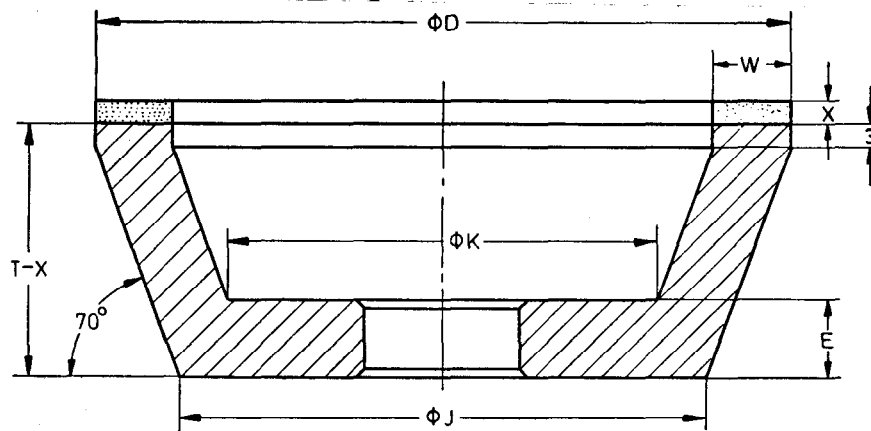
3.7 Straight Cup Grinding Wheel — Designation 6A2



All dimensions in millimetres.

D	T - X	E	W								X
			3	5	6	10	12	15	20	25	
50	20	10	×	×	—	—					2, 3, 4, 6
75	20	10	×	×	—	×					
100	23	10	—	×	—	×	×	×			
125	23	10	—	—	×	×	×	×	×	×	
150	23	10	—	—	×	×	×	×	×	×	
175	25	13	—	—	×	×	—	×	×	×	
200	25	13	—	—	—	×	—	×	×	×	
250	25	13	—	—	—	×	—	×	×	×	
300	30	15	—	—	—	—	—	—	×	×	
350	35	18	—	—	—	—	—	—	—	×	

3.8 Taper Cup Grinding Wheel — Designation 11A2

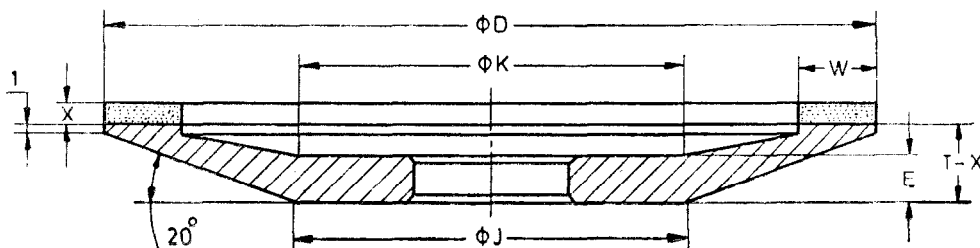


All dimensions in millimetres.

<i>D</i>	<i>T-X</i>	<i>J</i>	<i>K</i>	<i>E</i>	<i>W</i>	<i>X</i>
75	20	63	48	10	3, 6, 10	2, 3, 4
90	33	68	55	10	6, 10	
125	23	110	98	10	6, 10	

3.9 20° and 45° Dished grinding wheel — Designation 12A2

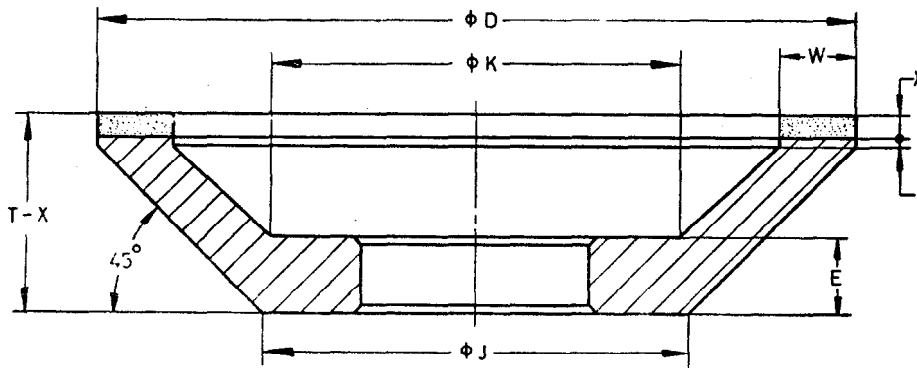
3.9.1 Dished Grinding Wheel



All dimensions in millimetres.

<i>D</i>	<i>T-X</i>	<i>J</i>	<i>K</i>	<i>E</i>	<i>W</i>				<i>X</i>
					3	5	6	10	
75	8	37	33	5	×	×	×	×	2, 3, 4
100	10	51	50	6	×	×	×	×	
125	14	54	54	8	—	×	×	×	
150	16	68	68	9	—	×	×	×	
175	18	82	82	10	—	—	×	×	
200	20	96	96	11	—	—	×	×	
250	23	130	130	13	—	—	×	×	

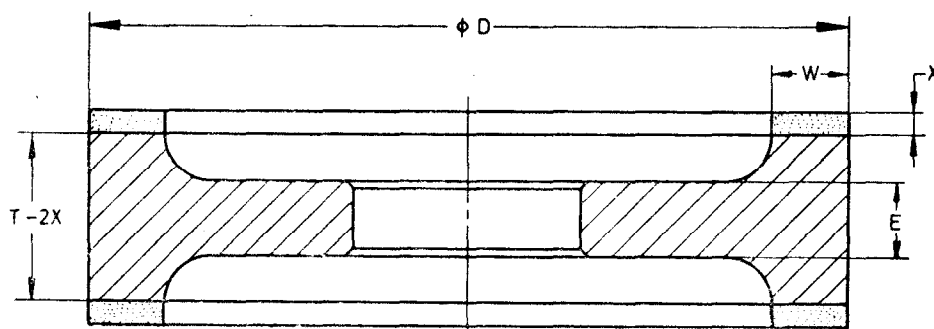
3.9.2 45° Dished grinding wheel



All dimensions in millimetres.

D	T-X	J	K	E	W					X
					3	6	10	15	20	
75	20	41	37	9	×	×	×	—	—	2, 3, 4, 6
100	23	56	54	10	—	×	×	—	—	
125	23	81	79	10	—	×	×	—	—	
150	23	106	94	10	—	×	×	×	—	
157	25	131	123	12	—	×	×	×	—	
200	25	156	138	12	—	—	×	×	×	
250	25	206	188	12	—	—	×	×	×	

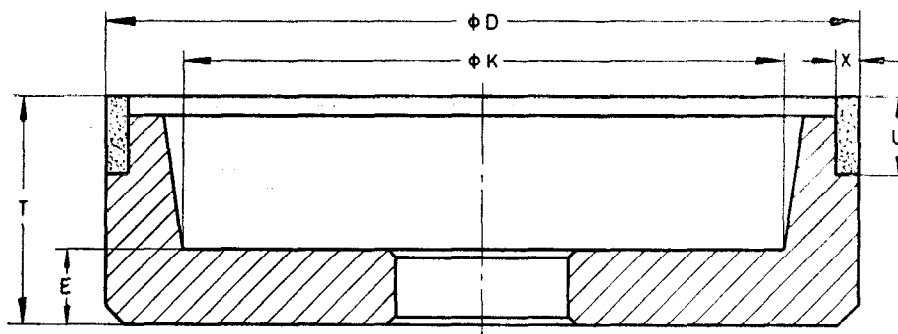
3.10 Plain Grinding Wheels With Two Recesses — Designation 9A3



All dimensions in millimetres.

D	$T-2X$	E	W					X
			6	8	10	12	15	
100	22	10	×	×	×	—	—	2, 3, 4
125	22	10	×	×	×	—	—	
150	25, 35	14	×	×	×	×	×	
175	25, 35	14	×	×	×	×	×	
200	30	18	—	×	×	×	+	

3.11 Straight Cup Grinding Wheel — Designation 6A9

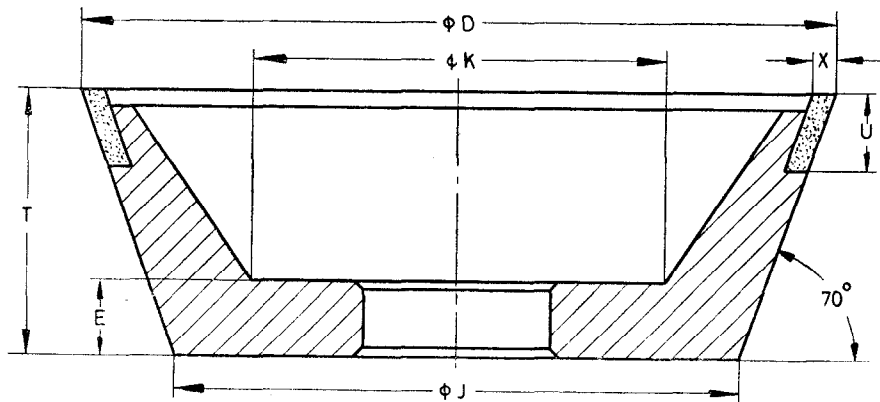


All dimensions in millimetres.

D	T	K	E	U	X
75	25	60	10	6, 10	1, 5, 3
100	30	80	10	6, 10	
125	30	110	10	6, 10	
150	35	135	10	6, 10	
200	35	175	13	6, 10	
250	50	225	20	6, 10	

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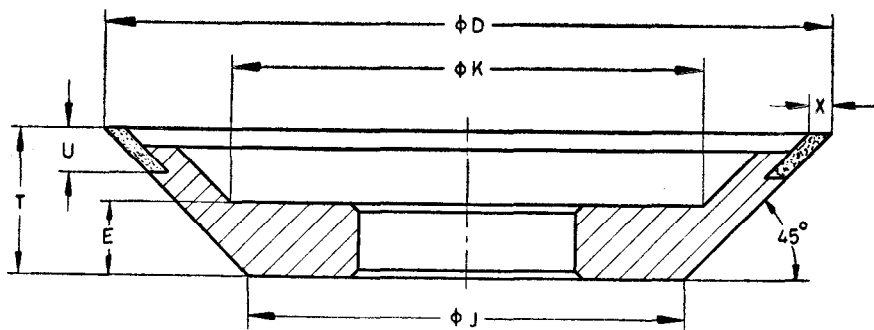
3.12 Taper Cup Grinding Wheel — Designation 11V9



All dimensions in millimetres.

<i>D</i>	<i>T</i>	<i>J</i>	<i>K</i>	<i>E</i>	<i>U</i>	<i>X</i>	
75	30	53	40	10	6, 10	1.5, 3	
90	35	65	55	10	10		
100	35	75	55	10	6, 10		
125	40	96	75	10	6, 10		
150	50	114	90	10	6, 10		

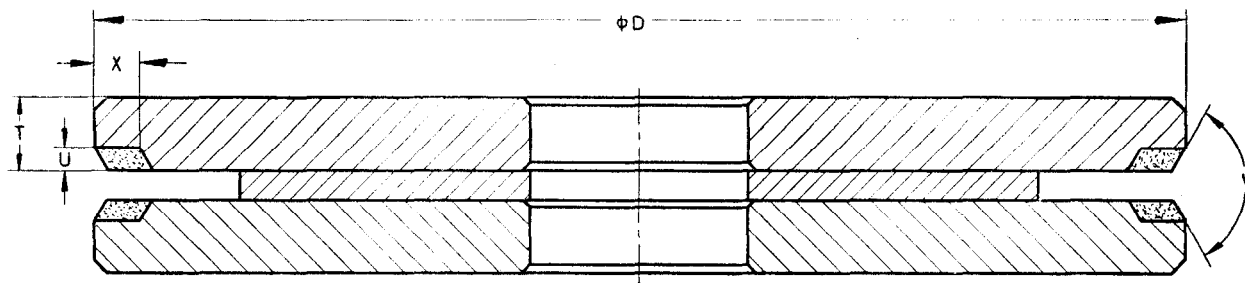
3.13 Taper Cup Grinding Wheel — Designation 12V9



All dimensions in millimetres.

<i>D</i>	<i>T</i>	<i>J</i>	<i>K</i>	<i>E</i>	<i>U</i>	<i>X</i>	
						1.5	3
75	20	35	45	10	6	×	×
100	20	60	65	10	6, 10	×	×
125	25	75	80	10	6, 10	×	×
150	25	100	105	10	6, 10	—	×

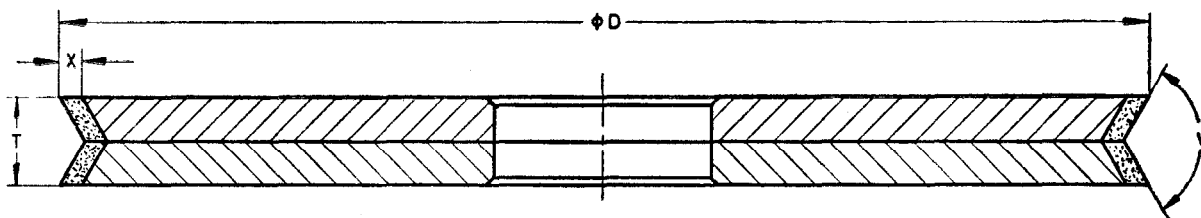
3.14 Plain Grinding Wheel — Designation 1V9



All dimensions in millimetres.

D	T	U	V	X
150	10	2, 3	90°, 120°	1.5, 3, 6
175	10	2, 3	90°	
200	10	2, 3	90°	
250	10	2, 3	90°	

3.15 Plain Grinding Wheel — Designation 1EE1V



All dimensions in millimetres.

D	T	V	X
100	7	120°	1.5, 3
110	7	120°	
150	10, 12	125°, 135°	
150	15	135°	

4. General Requirements

4.1 The true running of grinding wheels, when tested, shall fall within the limits specified below:

Shape	Total Indicator Reading (TIR) mm		
	Periphery	Sides	Rim
Peripheral grinding wheels	0.05	0.08	—
Straight cup and dish grinding wheels	0.08	—	0.05
Taper cup grinding wheels	0.05	—	0.05

4.2 The tolerances on various dimensions of diamond grinding wheels shall be as given below:

Outside diameter	$D = \pm 1.5 \text{ mm}$
Thickness	$T = \pm 0.4 \text{ mm}$
Bore diameter	$H = H_7$ or any other tolerance as agreed between manufacturer and purchaser
Rim width	$W = \pm 0.8 \text{ mm}$ or ± 5 percent of rim width whichever is more
Depth of diamond section	$X = \pm 5$ percent of the depth of diamond section

4.3 All grinding wheels shall be dynamically balanced.

4.4 All grinding wheels shall have chamfer at the bore.

5. Type of Bond — The type of bond for the grinding wheels shall be resin or metal.

6. Grit Size — The diamond grit size shall conform to IS : 10960 (Part 1)-1984 'Grain sizes for diamond or cubic boron nitride: Part 1 Designation and grain size distribution'.

6.1 Selection of Grit Size — The selection of grit size is based on the surface finish requirements and rate of material removal. Following are the general recommended guidelines for selection of grit size of diamond abrasive.

Surface Finish	IS Grit Designation	
	Diamond	CBN*
Very-coarse Medium-coarse	D 181 D 151	B 181 B 151
Medium Medium-fine	D 126 D 107	B 126 B 107
Fine Very fine Extra fine Super fine	D 91 D 76 D 54 D 46	B 91 B 76 B 54 B 46

*Cubic boron nitride.

7. Designation — Diamond grinding wheels shall be designated in accordance with IS : 10986-1984 'General survey, designation and nomenclature of diamond or cubic boron nitride grinding wheels and saws'.

8. Concentration — As a basic value for diamond concentration in grinding wheels, 100 is equivalent to 4.4 carats per cubic centimetres. (0.88 g/cm^3). This figure corresponds to 25 percent by volume, taking the density of diamond as 3.52 g/cm^3 . Standard concentration shall be 125, 100, 75 and 50. Other concentrations may be as agreed between the manufacturer and the purchaser.

9. Marking — All diamond grinding wheels shall be marked legibly on the core, with the following information:

- a) Designation;
- b) Diamond concentration;
- c) Diamond grit size with a suffix as D for diamond and B for cubic boron nitride;
- d) Depth of diamond impregnation;
- e) Manufacturer's serial number; and
- f) Manufacturer's name or trade-mark.

9.1 ISI Certification Marking — Details available with the Indian Standards Institution.

10. Packing — The grinding wheels shall be suitably packed to avoid damage during handling and transportation.

11. Method of Ordering — While purchasing diamond grinding wheels, the purchase order shall contain the following information:

- a) Type of grinding wheel,
- b) Designation,
- c) Diamond concentration,
- d) Diamond grit size,
- e) Type of bond (resin or metal), and
- f) Type of grinding (wet or dry).

EXPLANATORY NOTE

The diamond or cubic boron nitride abrasive grinding wheels have diamond grains of different grit size designation bonded together with metallic, resinoid or similar bonds and held on metal or resin filled body. These wheels are used for finish grinding of tungsten carbide tipped tools, cutters, dies, and in ceramic industry for grinding ferrite. These are also used in the manufacture of optical lenses.

This standard was first published in 1965. This revision has been taken up in order to align the standard with the work done at ISO level. Various other types of diamond grinding wheels which are commonly being used have also been included. Selection of grit size for the grinding wheels with reference to surface finish has been included for the guidance of the users. For selection of diamond or CBN grinding wheels; reference may be made to 'Recommendations for selection of diamond or CBN grinding tools' (*under preparation*).

In the preparation of this specification, considerable assistance has been derived from ISO 6168-1980 'Abrasive products—Diamond or Cubic Boron Nitride Grinding Wheels—Dimensions' issued by the International Organization for Standardization (ISO).